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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/063,822	05/16/2002	Shu-Wen Sung	KYCP0005USA	4336

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NAIPO (NORTH AMERICA INTERNATIONAL PATENT OFFICE)  
P.O. BOX 506  
MERRIFIELD, VA 22116

EXAMINER

NGUYEN, JOSEPH H

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 09/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/063,822

Applicant(s)

SUNG ET AL.

Examiner

Joseph Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 May 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Rennie et al.

Regarding claim 1, Rennie et al discloses on figure 5 a light emitting diode comprising an insulating substrate 1; a semiconductor multiplayer positioned on the insulating substrate, the semiconductor multiplayer comprising a first surface and a second surface, a distance between the first surface and the insulating substrate is greater than a distance between the second surface and the insulating substrate; a first transparent ohmic contact electrode 13 positioned on the first surface; and a second transparent ohmic contact electrode 3 positioned on the second surface; wherein the first transparent ohmic contact electrode and the second transparent ohmic contact electrode comprise the same materials.

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Regarding claim 2, Rennie et al discloses on figure 5 the insulating substrate 1 comprises sapphire.

Claims 1-2 are rejected under 35 U.S.C. 102(e) as being anticipated by Koide et al.

Regarding claims 1-2, Koide et al discloses on figure 11 all the structures set forth in the claimed invention.

Claim 4 is rejected under 35 U.S.C. 102(e) as being anticipated by Saito et al.

Regarding claim 4, Saito et al discloses on figure 12 a light emitting diode comprising an insulating substrate 400, an n type contact layer of GaN based compounds positioned on the insulating substrate, and a transparent ohmic contact electrode 412 positioned on the contact layer 402, the transparent ohmic contact electrode 412 being made of indium tin oxide (ITO).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rennie et al or Koide et al as applied to claim 1 above, and further in view of Nitta.

Regarding claim 3, Rennie et al or Koide et al discloses the first and second transparent ohmic contact electrodes made of the same material. Rennie et al or Koide et al does not disclose the same material being ITO. However, Nitta discloses on figure 3 that the electrode 107 made of ITO. In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Rennie et al or Koide et al by having the first and second transparent ohmic contact electrodes made of ITO for the purpose of improving the performance of an LED device.

Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koide et al in view of Watanabe et al.

Regarding claim 5, Koide et al discloses on figure 11 a light emitting diode comprising an insulating substrate 1, a buffer layer 2 positioned on the insulating substrate; an n+ type contact layer 3 positioned on the buffer layer, the contact layer comprising a first surface and a second surface; an n type cladding layer 4 positioned on the first surface of the n+ type contact layer; a light emitting layer 50 positioned on the n-type cladding layer; a p type cladding layer 61 positioned on the light emitting layer; a p-type contact layer 62 positioned on the p type cladding layer;...p type transparent ohmic contact electrode 7...; an n type transparent ohmic contact electrode 8 positioned on the second surface of the n+ type contact layer; wherein the p type transparent ohmic contact electrode 7 and the n type transparent ohmic contact electrode 8 comprise the same materials. Koide et al does not disclose an n+ type reverse tunneling layer positioned on the p-type contact layer. However, Watanabe et al

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discloses on figure 1 an n+ type reverse tunneling layer 7 positioned on the p type contact layer 6. In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Koide et al by having an n+ type reverse tunneling layer positioned on the p-type contact layer for the purpose of obtaining a high efficiency Led device as taught by Watanabe et al (col. 3, lines 1-3).

Regarding claim 6, Koide et al discloses the insulating substrate is sapphire.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koide et al and Watanabe et al as applied to claim 5 above, and further in view of Nitta.

Regarding claim 7, Koide et al and Watanabe et al disclose the first and second transparent ohmic contact electrodes made of the same material. Koide et al and Watanabe et al do not disclose the same material being ITO. However, Nitta discloses on figure 3 that the electrode 107 made of ITO. In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Koide et al and Watanabe et al by having the first and second transparent ohmic contact electrodes made of ITO for the purpose of improving the performance of an LED device.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent 6078064 to Ming-Jiunn et al discloses a LED device.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (703) 308-1269. The examiner can normally be reached on Monday-Friday, 7:30 am- 4:30 pm

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned is (703) 308-7382 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JN  
August 28, 2002



EDDIE LEE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800